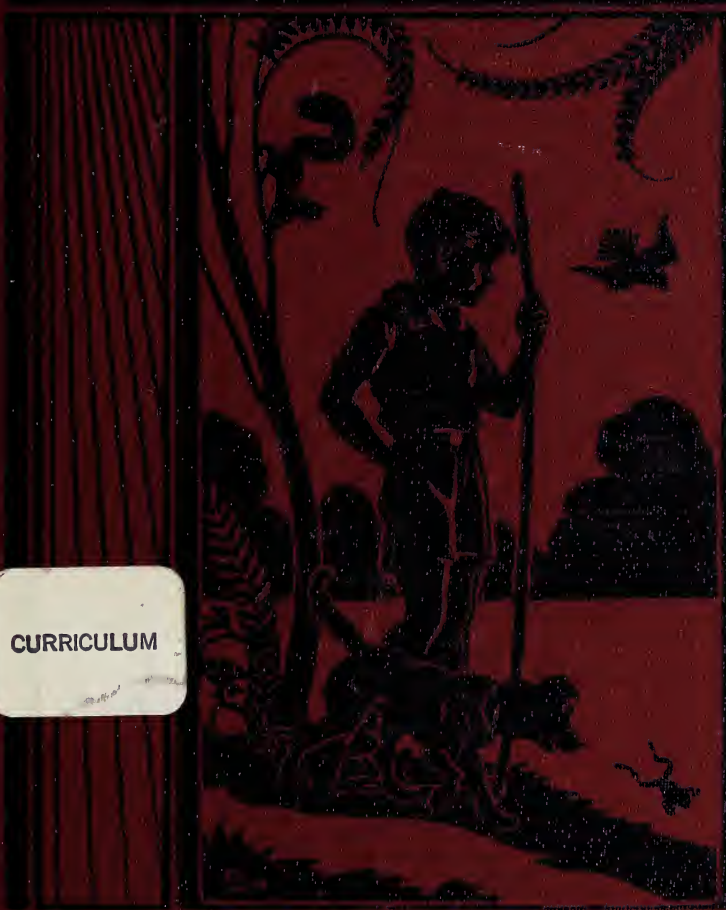
SCIENCE STORIES

BOOK ONE



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CURRICULUM FOUNDATION SERIES

SCIENCE STORIES

BOOK ONE

by

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GERTRUDE CRAMPTON
and
WILLIAM S. GRAY
Reading Director

BASIC STUDIES IN SCIENCE

TORONTO
W. J. GAGE & CO., LIMITED

ILLUSTRATIONS

Since proper illustration is a factor of vital importance in the successful use of an elementary science book, great pains and much expense have been assumed by the publishers of *Science Stories, Book One,* to provide illustrations which combine child-appeal with scientific validity of form and color.

The combination of these two prime requirements has enlisted the cooperation of the well-known illustrators of children's books, *Miriam Story Hurford, Donn P. Crane,* and *Studley Burroughs,* together with two artists in the scientific field, *Leon L. Pray* of the Field Museum, Chicago, and *Frances Summers* of the Illinois State Museum, Springfield.

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PREFACE

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Science Stories, Book One is the first unit of a group of elementary Science books in the Curriculum Foundation Series. Each group of books within the Series provides reading and study experiences in a specific field which parallel and reinforce oral learning activities at the same level.

Science Stories is more than a nature study text. It is organized with regard to fundamental scientific ideas; supplies a content of authentic information; and introduces the scientist's method of solving problems by observation and experiment. Thus it provides opportunities for the pupil, even at this early stage, to use scientific information and methods of thinking for better interpreting his environment.

For successful use in the lower grades, science textbooks must recognize the limited reading experience and abilities of children. Unnecessary reading difficulties must be scrupulously avoided. The pupil's effort must be centered upon the study of scientific ideas rather than upon the mere task of reading.

Science Stories, Book One has been carefully edited with regard to reading difficulties. The vocabulary is correlated with that of the *Basic Reader, Book One.* But since *Science Stories* is easier than most first readers, it may be successfully undertaken by an average group after any typical first-semester reading experience.

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SEASONS

Spring

One spring day Patty and Billy and Father were walking in the woods.

All at once Father stopped.

"The frogs are out," he said.

"Look! There is one!"

"I see it!" cried Patty.

Splash! It went into the water.

"There it goes!" cried Billy.

"When the frogs come out, we know it is spring," said Father.

"Frogs sleep in the mud all winter. But just as soon as spring comes, they come out."

"How do frogs know when it is time to come out?" asked Billy.

"How do they know it is spring?"

Father said, "Well, how do you and Patty know it is spring?"

Billy looked all about him.

Then he said, "I know it is spring when the flowers come."

Patty said, "I know it is spring when the birds make nests.

Is that how the frogs know?"

"No," said Father.

"You must guess again."

"The grass turns green in spring," said Billy.

"And trees get new green leaves. Is that how frogs know it is spring?"

"No, Billy," said Father.

"Oh, please tell us," said Patty.

Father said, "In spring the sunshine grows warm.

The days grow long, too, and so we have more sunshine every day.

The sunshine makes the mud warm.

Then the frogs come out."

"Oh," cried Billy. "The sunshine tells the frogs when it is spring!"

"You have guessed it," said Father.

"The sunshine tells me it is spring," said Patty. "It makes me warm."

Father said, "We could not have spring without warm sunshine.

It makes the days warm.

It makes the plants grow."

"Yes," laughed Billy. "And it makes the frogs come out of the mud."

Summer

When summer came, the sunshine grew very warm.

The sun came up a long time before breakfast and went down long after supper.

So Patty and Billy had a long time to play outdoors every day.

They liked to play under the trees.

The leaves were thick on the trees, and the grass was very green.

"The plants in our garden look fine," said Mother one day.

"They grow fast in summer."

Patty said, "I like summer.

In summer we get good things to eat from our garden.

And we see many pretty flowers."

Mother said, "We see many animals in summer, too. I see some now."

"I don't see any animals!" said Patty.

"You see butterflies and birds and bees," said Mother. "They are animals."

Patty looked surprised.

"I did not know that!" she said.

"All living things that are not plants are animals," said Mother.

"Animals get food from plants.

The butterflies and bees get food from the flowers.

Some of the birds eat the leaves of plants. So do rabbits and squirrels."

"Oh, my!" said Patty.

"They will eat up all our plants."

"No," said Mother. "There is food in the garden for us all."

Autumn

When autumn came, it grew dark soon after supper.

And the sunshine was not so warm as summer sunshine.

One morning Patty went to get some flowers from the garden.

But the flowers were turning brown.

"Oh, dear!" said Patty. "The flowers are not pretty now.

And all the plants are getting dry and brown."

Then Patty saw the pumpkins.

"The pumpkins have turned yellow!" she said.

"Soon they will be good to eat, and we can have some pumpkin pies."

When Patty went to school that day, she told Miss Hill and the children about the garden.

"There are no pretty flowers now," she said. "But I saw something in the garden that is good to eat.

It is round and green in summer and round and yellow in autumn.

Guess what it is."

"A pumpkin!" cried Jack.

"Yes," laughed Patty.

Then Miss Hill said, "Guess what I am thinking about.

"It is a very big plant.

It is green in summer and turns red and yellow and brown in autumn."

The children could not guess.

So Miss Hill said, "Let's all go for a walk and find the big plant."

Soon they were all walking along under the trees.

"Look!" said Billy. "That tree has red and yellow and brown leaves."

"The leaves were green in summer," said Nancy.

"They have changed color!"

"Oh, Miss Hill!" cried Billy.

"We know what the big plant is. It is a tree!"

The children saw leaves falling from the trees.

The grass and many other plants were turning brown and dry.

"May we take some autumn leaves back to school?" asked Nancy.

"Yes," said Miss Hill. "Then we can make an autumn sand table."

An Autumn Sand Table

On the way back to school Billy found an old nest in a tree.

"We can take this nest to school for the sand table," said Miss Hill.

"The birds won't come back to it. They have gone away."

"Where did they go?" asked Joe.

"They went south," said Miss Hill.

"Many birds go south in autumn.

Winters are warm in the south, and the birds can find food.

In spring they come north again.

But some birds live here in winter."

"Bluejays do," said Nancy. "We can make a toy bluejay and put it on our sand table."

Just then Jack called to Miss Hill.

"See the pretty leaves on this tree," he said.

Miss Hill looked at the tree.

"Why, Jack!" she said. "They are not leaves. They are butterflies!"

Miss Hill called the other children.

"Look at the butterflies," she said. "They have stopped here a while on their way south. They go south in autumn just as birds do."

How surprised the children were!

They did not know that butterflies ever went south.

"We have many kinds of butterflies," said Miss Hill.

"This kind goes south in autumn and comes north in spring.

Many other kinds do not fly south.

Some kinds go to sleep in autumn and sleep all winter long."

"The frogs sleep all winter, too," said Billy.

"Many kinds of animals sleep all winter," said Miss Hill.

"That is why we don't see them in autumn and winter.

But we see some of the animals that do not sleep all winter."

Joe said, "Squirrels and rabbits do not sleep all winter. Should we put them on our autumn sand table?"

"Yes, Joe," said Miss Hill.

"Now let's go back to school and make the sand table."

Look at the picture. The children are making the autumn sand table.

Does it look like autumn?

Why do you think so?

Winter

Penny did not like to play by himself.

How happy he was when Jack and Nancy came home from school and played with him!

But when winter came, the days were short, and the nights were long.

It grew dark soon after school, and the children did not have much time to play outdoors.

Winter days were very cold, for the sunshine was not so warm as autumn sunshine.

The nights were very cold, too.

But Penny did not get cold, for his coat grew thick and warm.

One morning Penny wanted a drink.

He looked at his pan. Then he ran to the house very fast.

"Bow-wow!" he said.

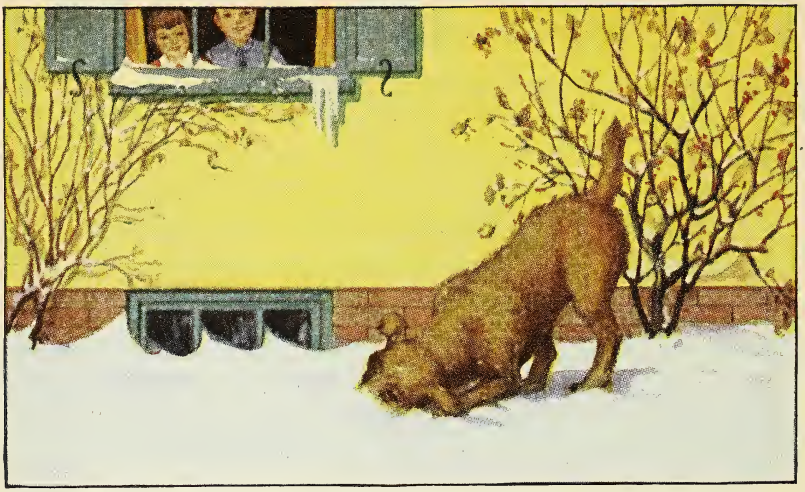
When Jack opened the door, Penny ran back to his pan.

"Why, Penny!" cried Jack. "There is ice in your pan. Winter is here!

Jack gave Penny a drink of water.

Then he and Nancy went to school.

Penny played all day by himself, but he did not have much fun.



Next morning when Penny looked outdoors, he had a big surprise.

The ground was covered with snow!

Penny ran out and pushed his nose into the snow. Then he ran around and around in it.

The children saw him playing.

"Oh!" cried Nancy.

"Now Penny is having a good time all by himself!"

Tracks in the Snow

It is winter in this picture.

Do you see tracks in the snow?

A rabbit made the tracks. He is looking for some plants to eat.

The only plants that he can find in winter are dry and brown.

But he eats them anyway.

Many other animals have to look for food in winter.

They make tracks in the snow.

Do you ever see their tracks?

A Winter Sand Table

After the snow came, Joe said, "We should change our autumn sand table to a winter sand table."

"We must find out what things to change," said Miss Hill. "You may all go to the windows and look out.

See if the plants look as they did in autumn. Look for other changes.

Then you will know how to make a winter sand table."

Can you make a winter sand table?
Should there be snow on it?
Should there be ice on it?
What animals should you put on it?
Should there be some plants on it?
How should the plants look?

Where Does Dick Live?

Dick has just come home from school.

It is winter where Dick lives.

But there is no ice or snow.

Does Dick live in the south or in the north?

How can you tell?

Things to Find Out

Spring, summer, autumn, and winter are called seasons.

After winter we have spring.

After spring we have summer.

After summer we have autumn.

After autumn we have winter.

When winter is over, spring comes again.

Which season is it now?

Which season came before this one?

Which season comes after this one?

Are the days warm now, or are they cold?

Does the sun go down before supper or after supper?

Are the days short or long?

Which are warmer, autumn days or summer days?

Which are longer?

Which are warmer, autumn days or winter days?

Which are warmer, spring days or winter days?

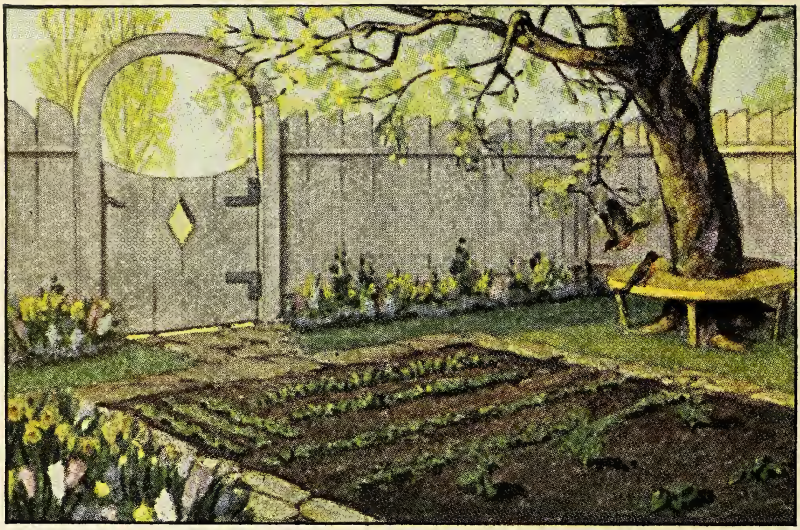
Which are longer?

Which are warmer, spring days or summer days?

Which are warmer, summer days or winter days?

Which are longer?

Which are longer, summer nights or winter nights?



Four Seasons in the Garden

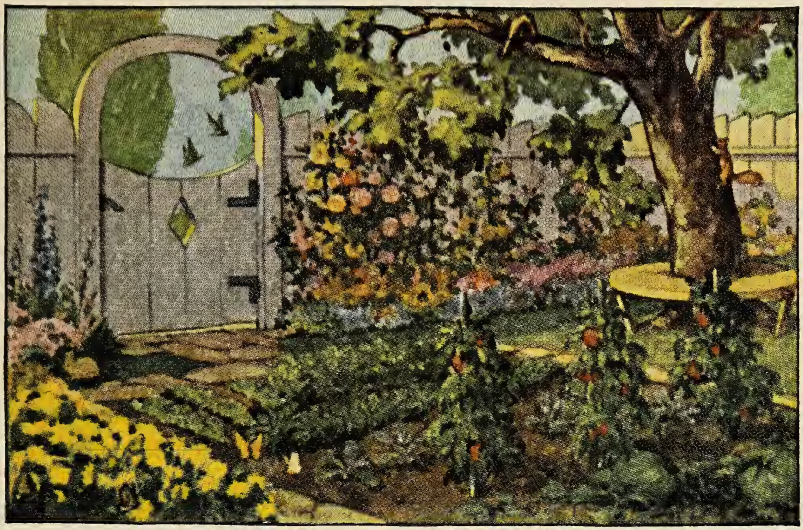
This picture shows how a garden looks in spring.

New plants are beginning to grow.

The tree has new green leaves, and the grass is green.

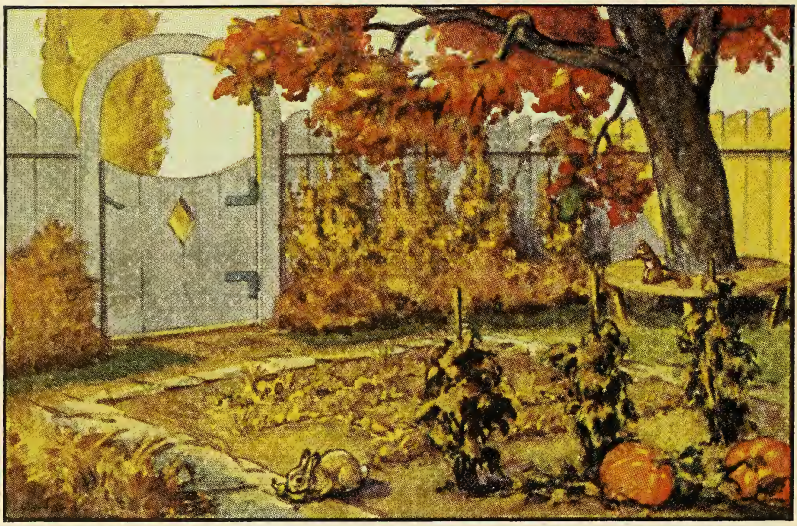
Spring flowers are in blossom.

What animals do you see?



Here is the garden in summer.
Does it look as it did in spring?
See how the plants have changed.
Are the leaves thick on the tree?
What color is the grass?
Are there many flowers?

Look for animals in the garden.
What ones do you see?



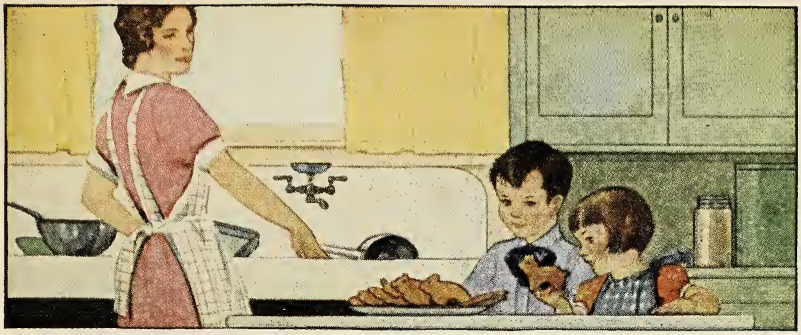
Here is the garden in autumn.
Does it look as it did in summer?
See if the plants have changed.
What color are the leaves?
What color is the grass?
Do you see flowers in blossom?

Do you see any animals?
Name the ones you see.

Here is the garden in winter.
Does it look as it did in autumn?
Do you see any plants?
Tell how they look.
Are any flowers in blossom?
What covers the ground?

What animal do you see?
Find its tracks in the snow.

WEATHER



The Wind and the Umbrella

One day Mother helped Jack and Nancy make some animal cookies.

"My, they look good!" said Nancy.

"I think so, too," said Mother.

"I think they look almost as good as Grandmother's cookies."

Jack said, "Oh, Nancy, let's take some cookies to Grandmother.

She gives us cookies."

"Let's take them now," said Nancy.

"May we, Mother?"

"Look outdoors," said Mother.

"Dark clouds have covered the sun, and it is beginning to rain.

The wind is blowing, too."

"Jack and I are not afraid of rain and clouds and wind," said Nancy.

"We will put on our raincoats and take the big umbrella.

Then we will keep dry."

"All right," said Mother.

"You may go."

Mother put some of the cookies into a pretty box while Nancy and Jack put on their raincoats.

"Now we are ready," said Nancy.

"Here are the cookies," said Mother.

"Don't let the wind blow you away."

"We won't," laughed the children.

Nancy carried the box of cookies, and Jack carried the big umbrella.

"How strong the wind is!" said Jack. "It is pushing me."

"It is pushing me, too," said Nancy.

"It is pushing on our backs, and so it is helping us go to Grandmother's."

"Oo-oo-oo," sang the wind.

It blew the trees this way and that way.

"See how the trees are bowing their heads," said Jack.

"And see how dark it is getting!" said Nancy.

"Yes," said Jack.

"It is dark because it is cloudy.

The clouds are keeping the sunlight away from us."

Just then the wind almost blew the cookies away.

But Nancy did not let go of them.

"Oo-oo-oo," sang the wind.

"Oo-oo-oo," sang Nancy.

"Wind, we are not afraid of you. You won't get our cookies!"

The wind blew and blew.

It blew against Jack and Nancy.

It blew against the big umbrella.

It could not blow Jack away.

It could not blow Nancy away.

But just as they came to the door of Grandmother's house, the wind blew the big umbrella inside out!

"Oh, oh!" cried Jack and Nancy.

"Oo-oo, oo-oo!" laughed the wind.

Air and Wind

There is air all around us.

Air is moving all the time.

When the air is moving fast, we say that the wind is blowing.

Look at Picture 1.

Is the air moving fast?

How do you know?

Is the air moving fast in Picture 2?

How do you know?

Water in the Air

Betty came to school one morning with a new raincoat.

Joe said, "It is sunny today, Betty. Why do you have your raincoat?"

"I was afraid it was going to rain," said Betty. "I saw clouds in the sky."

"But they were only white clouds," said Joe.

"Rain comes from big dark clouds."

Tom looked out at the clouds.

"What makes clouds?" he asked.

Miss Hill said, "Water in the air makes them."

"Water in the air!" cried Tom.

"How does water get into the air?"

"I will show you," said Miss Hill.

Miss Hill put some water in a pan and put the pan over a fire.

Soon the water began to boil.

"The fire is making the water boil," said Joe.

The water boiled and boiled.

By and by it was all gone!

"Where did it go?" asked Betty.

"It went into the air," said Miss Hill.

"Will the water that was in the pan make a cloud?" asked Tom.

"It will help to make a cloud," said Miss Hill.

"Clouds are big and dark when there is much water in them.

Sometimes the water in the clouds falls to the ground.

Then we call it rain."

Joe said, "When it rains, we have wet weather."

Miss Hill looked out the window and said, "I think we are going to have wet weather in a short time.

The clouds are getting dark now."

Betty began to laugh.

"If it rains, I'll be glad that I have my new raincoat," she said.

Things to Find Out

Here are some more ways to see how water gets into the air.

Put a little water in a pan and put the pan in an open window.

Leave it in the window all day.

Does the water go out of the pan?

Where does it go?

Put some water on the blackboard with a cloth.

Does the blackboard get dry again?

Where does the water go?

Put some water on a cloth.
Watch to see if the cloth gets dry.
Where does the water go?

Do your shoes get wet when you walk in the rain?
Do they get dry again?
Where does the water go?

You have found out that water goes into the air and makes clouds.
There is some water in the air all the time.
When there is much water in the air, some of it falls to the ground.
Sometimes it is rain.
Sometimes it is snow.
Then we have wet weather.

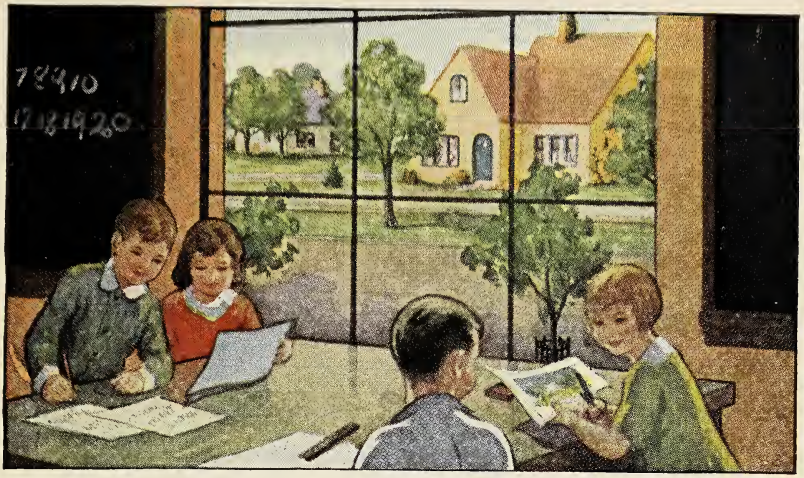
Kinds of Weather

We have many kinds of weather.
We have wet weather.
We have dry weather.
We have warm weather, and we have cold weather.

We have sunny days, and we have cloudy days.
Some days are cloudy and warm.
Some days are cloudy and cold.
Some days are sunny and warm.
Some days are sunny and cold.

It is windy if the wind blows.
Some days are cloudy and windy.
Some days are sunny and windy.

What kind of weather is it today?



The Weather Book

The children in Miss Hill's room were making a weather book.

Every day they made a story about the weather.

One day Jane made a picture for the weather story.

It showed sunshine and children playing outdoors without coats.

What kind of weather was it?

Next day the wind was blowing.

Dark clouds covered the sun.

So the children made this story about the weather.

Today is a cloudy day.
The wind is blowing hard.
The clouds are big and dark.
It may rain soon.

"I think I can make a good picture for this story," said Joe.

His picture showed that the wind was blowing the trees.

It showed dark clouds in the sky.

In the picture a boy was running to his home.

Why do you think he was running?

"Look outdoors!" cried Betty.

"It is beginning to rain!"

"Oh!" said Joe.

"Now my picture is not right."

"I can make it right," said Betty.

Look at the picture and tell how Betty made it show the rain.

Make your own weather book.

Tell about the weather today.

See if the weather changes today.

Telling about Weather

Look at the next page.

Does Picture 1 show wet weather?

How do you know?

Does any other picture show wet weather?

Which pictures show dry weather?

Which ones show warm weather?

Which ones show cold weather?

How do you know it is cold?

Which pictures show a sunny day?

Which ones show a cloudy day?

Which pictures show a windy day?

How do you know it is windy?

Make a picture to show the kind of weather it is today.

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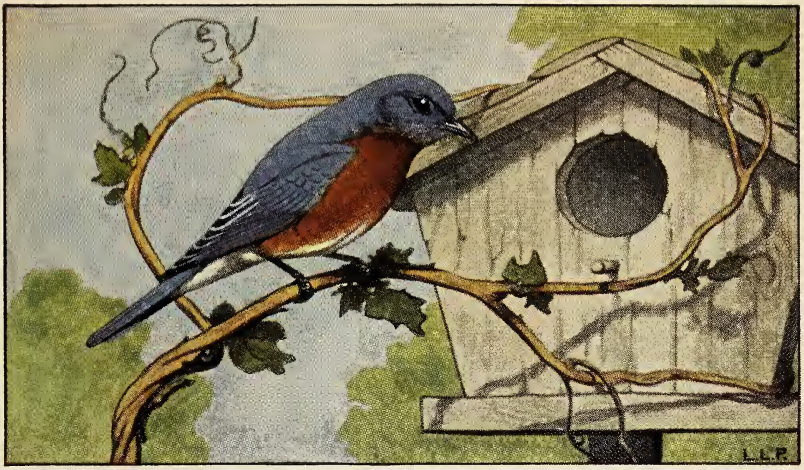
ANIMALS



Three Kinds of Birds

One spring day Bobby and Ann saw some birds fly to the bird house in the yard.

Their heads and wings and backs were blue. Their breasts were red.

"They are bluebirds," said Bobby. "They are making a nest."

"Oh, good!" said Ann. "I am glad they are going to live in our yard."

Bobby said, "Mother will be glad to have birds live here, because they eat bugs and worms.

Bugs and worms eat the plants in our garden."

"Robins eat bugs," said Ann. "Why don't robins make a nest here?

The apple tree would be a fine place for a nest."

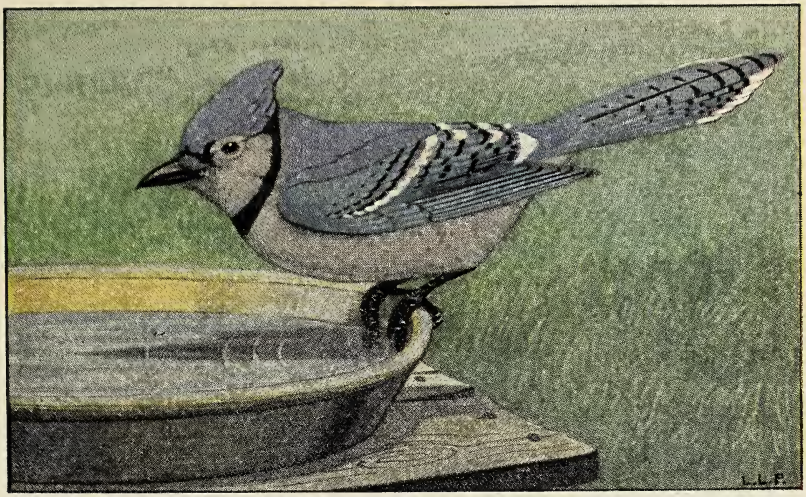
"Robins like to live in a yard where there is water," said Bobby.

"There is no water in our yard."

"Oh!" said Ann. "Let's put a pan of water under the apple tree.

Then maybe some robins will make a nest in the tree."

So the children put a pan of water under the apple tree.



This is the first bird that came for a drink.

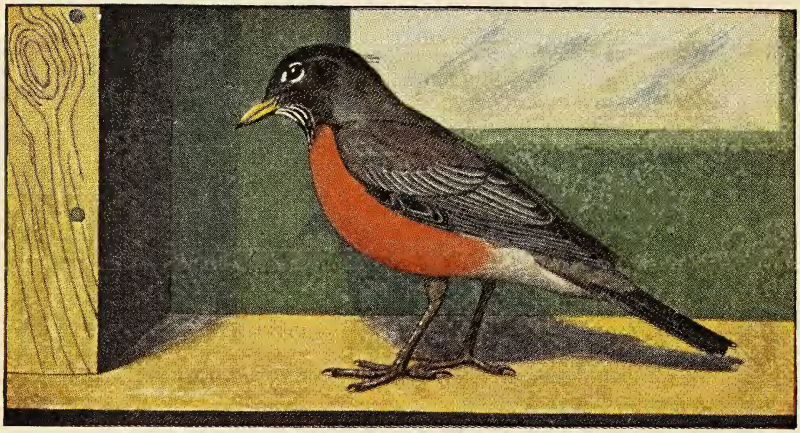
It is a bluejay. See how blue it is!

Can you see the black and white on its wings and tail?

Can you see black on its throat?

Other birds came for a drink, too.

Robins came every day and played and splashed in the water. But they did not make a nest in the tree.



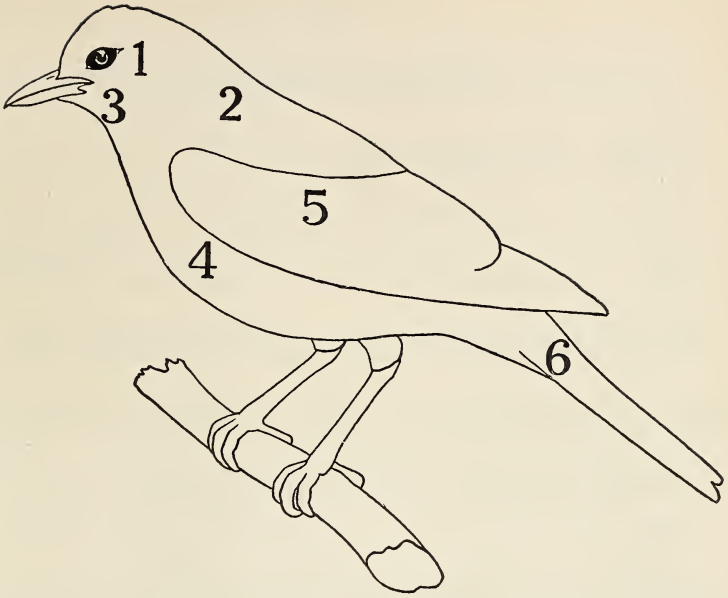
One morning Bobby and Ann saw a bird fly to a high window.

Its head and back and wings were brown. Its breast was red.

Ann said, "It is a robin. Maybe it is looking for a place to make a nest."

Another robin flew to the window. It had a twig in its bill.

"You are right, Ann!" cried Bobby. "At last the robins are making a nest in our yard!"



Parts of a Bird

Look at the picture on this page.
The bird's head is number 1.
Its back is number 2.
Its throat is number 3.
What number is its breast?
What part is number 5?
What part is number 6?

What Color?

Turn to page 56.

What color is a robin's head?

His throat is black and white.

Is his breast the same color as his throat?

What color is his breast?

What color are his wings?

Tell the color of his tail.

Turn to page 53.

What color is a bluebird's head?

What color is his back?

Tell the color of his breast.

What color are his wings?

Is his tail the same color as his back and wings?

Turn to page 55.

What color is a bluejay's back?

His head is blue and gray. Find these colors on his head.

What color is his throat?

Where do you see black on him?

What color is his breast?

Find three colors on his wings.

What are they?

Does his tail have the same colors as his wings?

How can you tell

1. a robin from a bluebird?
2. a bluebird from a bluejay?
3. a bluejay from a robin?

What is one way to tell one kind of bird from another kind of bird?

Making the Nest

Bobby and Ann watched the robins make their nest against the window.

The birds carried twigs and strings and long grass in their bills.

They used twigs to make the nest bigger and bigger.

They put the strings and grass in and out around the twigs.

That made the nest very strong.

A big bluejay sat in a tree and watched the robins.

Over and over again he screamed at them.

Ann and Bobby thought he said, "Thief! Thief!"

Ann said, "Why is he screaming 'Thief' at the robins? They did not take anything from him."

"Oh, he always screams like that at other birds," said Bobby.

"Many birds are afraid of him. He eats the eggs from their nests."

"Thief! Thief! Thief!" screamed the bluejay.

But the two robins were not afraid of the bluejay. They kept right on making their nest.

Soon the robins carried wet mud in their bills and put it all over the inside of the nest.

Then Mrs. Robin got into the nest and turned around and around.

She pushed against the wet mud and made the nest round inside.

The robins put grass into the nest and made it soft. Then Mrs. Robin laid a blue egg in it.

She laid one blue egg every day until there were four eggs.

Mrs. Robin sat on the nest and kept the eggs warm.

Day after day she sat there.

When she flew away to get food, Mr. Robin sat on the nest.

One day Ann saw Mrs. Robin fly from the nest.

Mr. Robin took her place, but soon he flew away, too.

The bluejay was watching.

As soon as Mr. Robin flew away, the bluejay started to the nest.

"Bobby!" cried Ann. "The bluejay will eat the robins' eggs!"

But Mr. Robin had not gone far.

He saw the bluejay, too.

"Look, Ann!" cried Bobby.

"Mr. Robin is coming back!"

Back came Mr. Robin, screaming at the bluejay.

The bluejay was afraid. Away he went as fast as he could fly!

"Thief! Thief!" he screamed.

The children laughed at him.

"He is a thief himself," said Bobby.

"Yes," said Ann. "He wanted to eat the robins' eggs."

The Baby Robins

For about two weeks the robins sat on the nest. Then four baby robins came out of the eggs.

Bobby and Ann could watch them from the inside of the window.

"They don't look much like birds," said Ann.

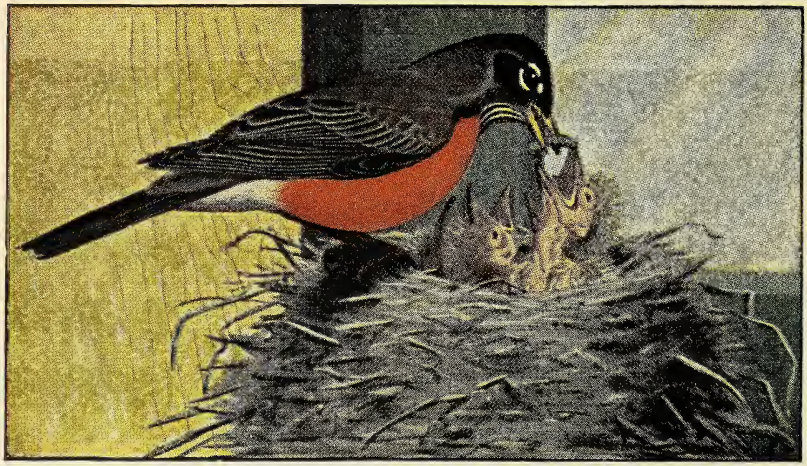
"They have no feathers."

"They will have feathers when they grow bigger," said Bobby. "Then they can fly."

The babies were always hungry.

They could not get their own food, because they could not fly.

So the mother and father robins carried bugs and worms to them.



One day the children saw Mr. Robin come to the nest with a worm.

He put it into one baby's mouth.

Next Mrs. Robin came with a worm and put it into another baby's mouth.

Whenever Mr. or Mrs. Robin came, all the babies opened their mouths.

Bobby laughed and said, "I would not want to be Mr. Robin.

Feeding baby robins is hard work."

Farm Babies

One day in spring Bobby and Ann went to a farm.

Mr. Gray lived on the farm.

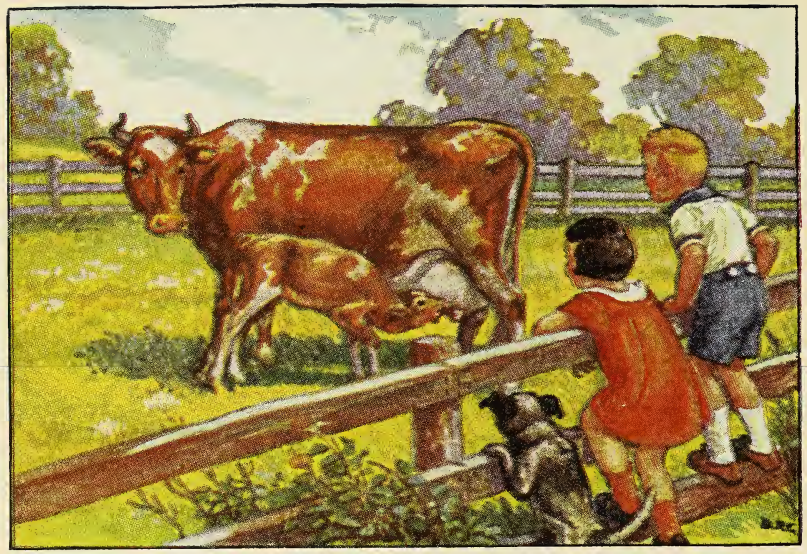
"Come with me, and I will show you some baby animals," he said to Ann and Bobby.

The first animals they saw were some baby chickens. The chickens looked like little black and yellow balls.

They ran about with their mother looking for food.

When the hen found something to eat, she called her babies. They all ran to help her eat it.

Mr. Gray let the two children feed the hen and her babies.



After that the children went to see a baby calf.

"May we feed the baby calf, too?" asked Bobby.

"Oh, no!" said Mr. Gray. "It takes its food from the mother cow.

She gives it milk. It is too little to have any other kind of food.

Milk will make it grow strong."

Ann said, "A baby calf gets milk from its mother.

But baby chickens eat the same kind of food their mothers eat."

"All baby birds eat the kind of food their mothers eat," said Mr. Gray.

"Why!" cried Bobby. "Chickens are not birds, are they?"

"Yes," said Mr. Gray. "All animals covered with feathers are birds."

Bobby looked at the calf and said, "A calf is covered with hair.

Do all baby animals that have hair get milk from their mothers?"

"Yes," said Mr. Gray.

"Many of our farm babies have hair, and they get milk from their mothers.

I'll show you some more of them."

Here are some farm animals that Bobby and Ann saw. Name them.

Which ones are covered with hair?

When the children went to the house, Mrs. Gray showed them a mother cat and four baby kittens.

"The kittens' eyes are not open!" said Ann. "Are they asleep?"

Mrs. Gray laughed and said, "No, Ann. Kittens do not open their eyes until they are about two weeks old.

These kittens are only a week old.

Their eyes will be open next week, and you must come and see them again."

"I wish I could have one," said Ann.

"When the kittens are bigger, you may have one," said Mrs. Gray.

"They must stay with their mother now. They should have her milk until they grow strong."

Just then one of the kittens got out of the basket.

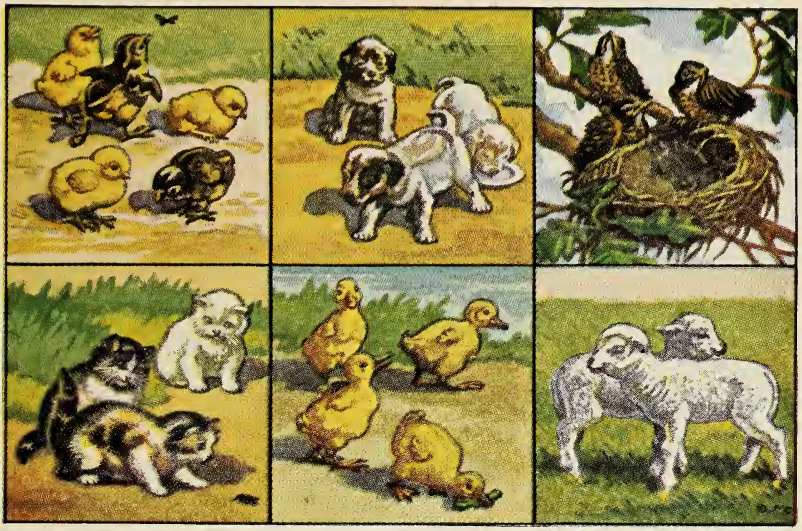
Bobby and Ann laughed when they saw how its mother carried it back to the basket.

"The mother cat takes good care of her babies," said Bobby.

Before Bobby and Ann went home, they had some milk to drink.

"I am glad the calf does not get all of the cow's milk," laughed Ann.

"We drink cow's milk, too."



Baby Animals

Look at the picture. What babies are covered with feathers?

Do they get milk from their mothers?

Name the babies that have hair.

Do they get milk from their mothers?

Baby animals that have hair get milk from their mothers.

Water Animals

Here are some animals that live in water.

They are Ann's fish.

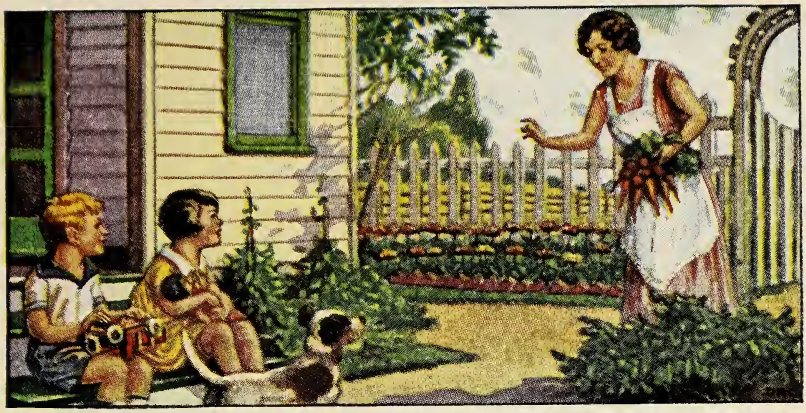
The children like to watch them swim and play in the water.

They have no wings or legs.

They have fins and tails.

They use their fins and tails to swim about in the water.

Can you see the fins?



A New Animal

Bobby and Ann and Spot were in the back yard.

Mother came from the garden and said, "Guess what animal I just saw in the garden.

It lived in the water when it was a baby. Now it lives on land."

"Is it a duck?" asked Ann.

Mother said, "Ducks do not live in water. They only swim in water."

"It could not be Spot," said Bobby. "Dogs swim, but they don't ever live in water. It must be a fish."

Ann said, "It cannot be a fish, because fish live in water all the time.

Mother told us that the animal lives on land now."

"Ann is right," said Mother.

"The animal is not a fish.

But when it lived in water, it looked a little like a fish.

It did not have any legs, and it used its tail to help it swim."

"Does the animal have any legs now?" asked Bobby.

"Yes," said Mother. "Four legs grew before he came out of the water.

He uses them to hop about on land.

So I call him Hopper.

All day long he goes hop, hop, hop in our garden."

"Won't Hopper eat our plants?" asked Ann.

"Oh, no," said Mother. "Hopper eats the bugs that eat our plants.

He eats many bugs every day."

"What color is he?" asked Bobby.

"He is the same color as the ground," said Mother. "So he is hard to find."

"Come on, Ann," said Bobby. "Let's see if we can find Hopper."

Spot got to the garden first.

He saw something go hop, hop, hop on the ground.

"Bow-wow-wow!" said Spot.

"See the toad!" cried Ann.

They watched the toad a while.

Then Bobby said, "When toads are tiny babies, they are called tadpoles.

Tadpoles live in water. And when they grow into toads, they come out of the water and live on land.

Now I know what Hopper is.

He is a toad!"

Things to Find Out

Almost all animals can move.
Some animals have legs.
They can walk, or run, or hop.
Some have wings, too, and can fly.
Some animals have fins and tails.
They can swim.

Name some animals that live on land.
How do they move on land?
What do they use to move with?
Which ones can fly?
What do they use to fly with?

Name an animal that lives in water.
How does it move?
What does it use to move with?
Where do tadpoles live?
How do tadpoles move?

Getting Ready for Winter

One autumn morning Bobby and Ann and Mother were canning food to put away for winter.

"You have worked hard and helped me very much," said Mother.

"Now it is almost noon, and Father is going to take us for a picnic."

So Mother and Ann put some lunch in a basket, and they all went for a picnic in the woods.

They found a good place to eat and put the basket on the ground.

A squirrel came to the basket, and the children gave him some nuts.

But he did not eat them.

He carried them away in his mouth.

"He is hiding the nuts," said Father.

"He stores food away now, and so he has something to eat in winter.

He makes a warm winter nest, too.

And his coat grows thick and warm.

It keeps him warm in winter."

"Do other animals have thick coats in winter?" Ann asked.

"Many animals do," Father said.

"Your dog and your pony do."

"Bears do, too," said Bobby.

"Yes," said Father. "And a bear makes a warm home where he sleeps all winter."

Just then they saw some wild ducks flying south.

"Wild ducks and many other birds go south," said Father. "That is how they get ready for winter."

Bobby and Ann played in the woods for a little while, but they did not see any more animals.

Soon it was time to eat lunch.

Mother laid a cloth on the ground and began putting the food on it.

The children ran to help her.

Then Bobby cried, "Look, Ann!

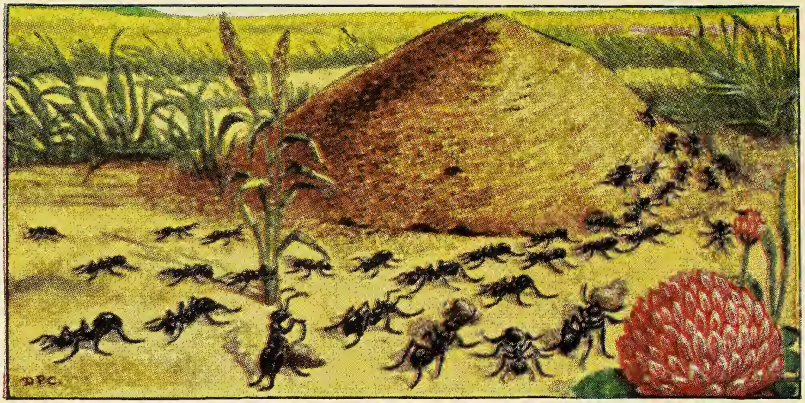
Here are some more animals. They are trying to get into our basket."

Big black ants were running all around the basket!

"They want our lunch," said Ann.

The children put bread crumbs and cookie crumbs on the ground, and the ants began to take them away.

"Let's watch and see where the ants are taking the crumbs," said Bobby.



They all watched the ants and saw them go into a little hill of earth.

"That little hill of earth is the ants' nest," said Father.

"There are many, many tiny rooms inside it."

The ants were running in and out of the nest.

Some were taking crumbs in.

Some were starting to the basket to get more crumbs.

"The ants are storing away food," said Father.

"Oh!" said Ann. "Ants get ready for winter, too."

Bobby said, "There are many ways of getting ready for winter.

Wild ducks go south.

Ants and squirrels store up food.

And bears make a warm place where they sleep all winter."

"We are like ants and squirrels," said Ann. "We store away food."

"We are like bears, too," said Bobby. "We have warm houses in winter."

"And we have thick, warm coats for winter," laughed Ann.

"Let's hurry and eat," said Mother. "I am as hungry as a bear!"

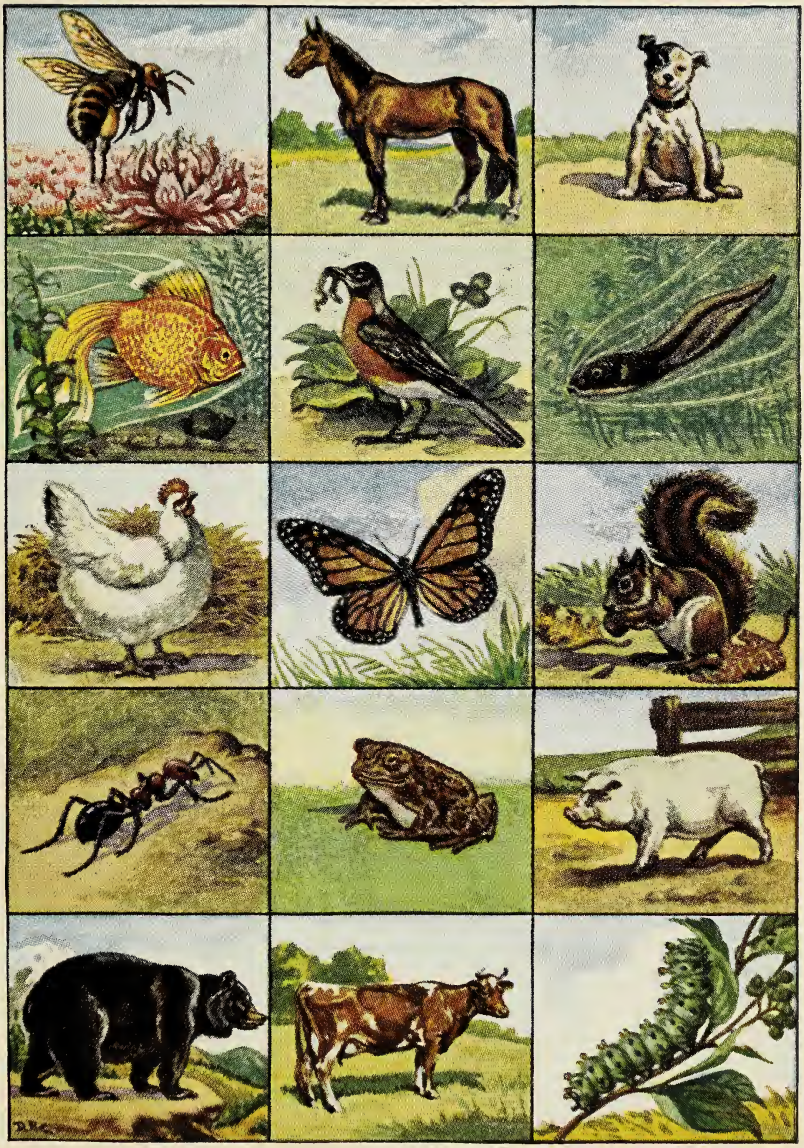
Telling about Animals

Name all the animals that you see on the next page.

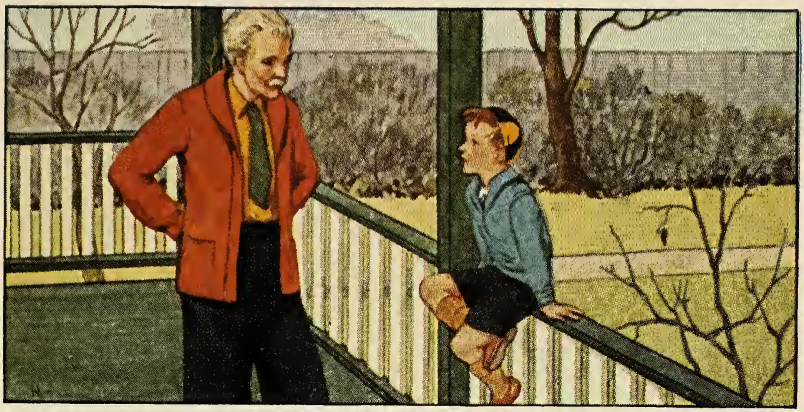
Name the ones that move with legs.
Name the ones that move with wings.
Name the ones that move with fins or tails.
Which animals live on land?
Which animals live in water?

Which ones get ready for winter?
Name the ones that store up food.
Name the ones that go south.
Which ones sleep all winter?

Which ones are covered with hair?
Which are covered with feathers?



PLANTS



The Surprise

Jim's birthday was in the spring.

Grandfather came to see Jim on his birthday.

"Happy birthday, Jim!" he said.

"Guess what I have for you. It is alive, but it cannot walk or talk.

It is little now, but it will grow until it is much bigger than you."

"I can't guess what it is," said Jim. "Please let me see it."

Grandfather said, "I will tell you more about it.

Then maybe you can guess.

It is a plant. It has roots, and it has a trunk. It has branches, too."

"Oh," cried Jim. "It is a tree!"

"Yes," said Grandfather. "It is a little apple tree."

He gave the tree to Jim.

"Plant it in a good place," he said.

"Take care of it, and some day it will have big, sweet apples on it."

"Thank you, Grandfather," said Jim. "Let's plant the little tree now. Where is a good place to plant it?"

Grandfather said, "The back yard is a good place.

It will get sunshine there."

They took the tree to the back yard.

First Grandfather made a big hole in the ground for the roots.

Then he put the roots of the tree into the hole.

"Now put some water in the hole," he said to Jim.

"The tree should have a big drink."

Jim put in the water. Then he helped Grandfather cover the roots with soft earth.

Jim looked at the little tree.

"My tree has no leaves," he said.

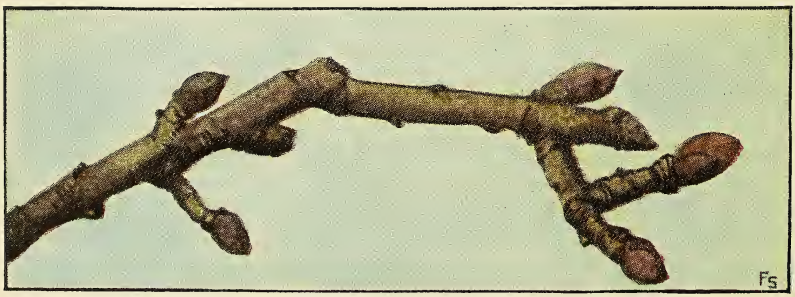
"The leaves fell off last autumn," said Grandfather. "And it is too early in the spring for new leaves to grow."

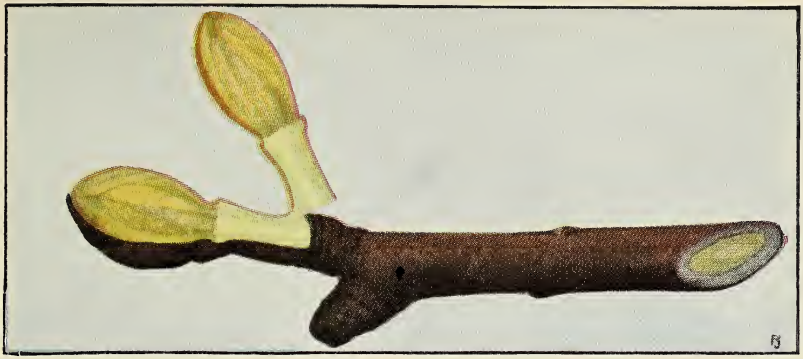
Grandfather cut a twig from one of the branches and showed Jim some little buds on the twig.

Each bud had a brown cover.

"Tiny leaves are inside the covers of the buds," said Grandfather.

"Spring rain and sunshine will make the leaves grow out."





Grandfather cut a bud open, and Jim saw the tiny leaves inside it.

"Now I know where the new leaves come from," said Jim. "But where do the apples come from?"

"Apples come from apple blossoms," said Grandfather.

"First, the tree must grow a while. When it is bigger, green flower buds will grow.

Pretty pink and white blossoms will come from the flower buds."

"Each blossom will have five pink and white petals," said Grandfather.

"Soon tiny green apples will begin to grow inside the blossoms. Then the pink and white petals will fall off.

The apples will grow and grow until they are big and sweet."

"And then I will give you some for your birthday!" cried Jim.

Parts of a Plant

Trees have roots.

Many other plants have roots.

All plants with roots have stems and leaves, too.

Some of these plants are little, and others are very big.

They do not all look alike.

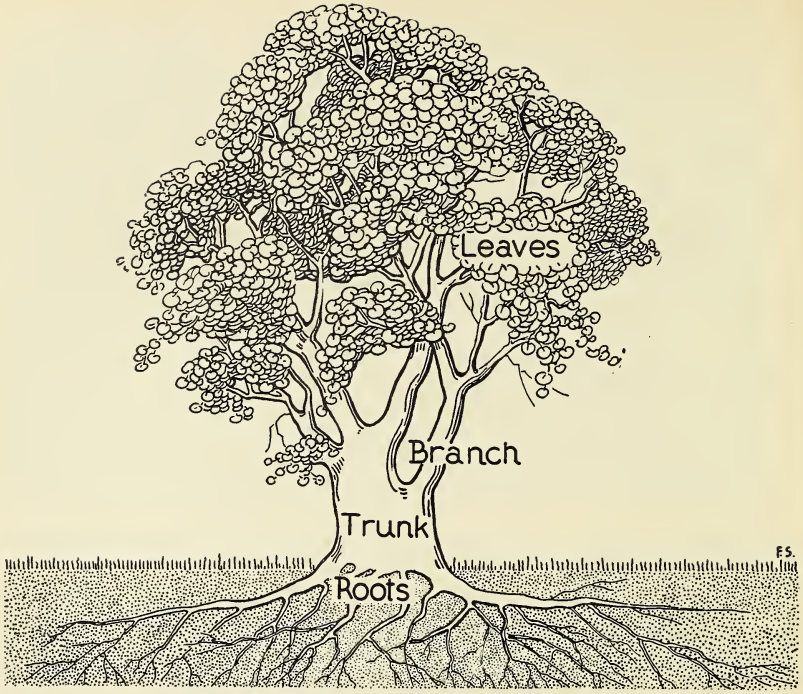
A tree is a big plant.

It has roots.

It has leaves.

It has a stem.

The stem is very big. We call it the trunk.



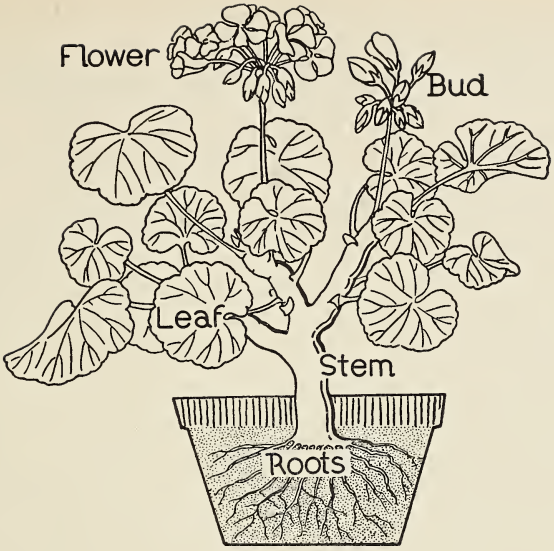
Where are the roots of this tree?

Find the stem. What is the stem of a tree called?

Find the leaves.

Some plants with roots and stems and leaves have branches, too.

Find the branches of this tree.



Where are the roots of this plant?

Find the stem.

Find the leaves.

How is this plant like a tree?

Does this plant have branches?

Many plants with roots and stems and leaves have flowers, too.

Do you see flowers on this plant?

Do you see some flower buds?

Three Kinds of Flowers

It was early in the spring, and the children in Miss Hill's room were going to plant flower seeds.

They wanted to give their mothers some plants for their gardens.

Each one had some soft black earth in a little flower pot and was ready to plant the seeds.

There were round gray seeds and big yellow seeds and tiny brown seeds.

Miss Hill said, "Nasturtiums grow from the yellow seeds, and sweet peas grow from the gray ones."

She got a flower book and showed the children pictures of sweet peas and nasturtiums.

Picture 1 shows sweet peas.

What colors are they?

Look at the long stems. How many flowers are on each long stem?

Picture 2 shows nasturtiums.

What colors are the flowers?

How many are on each stem?

How many petals has each flower?

Miss Hill said, "Pansies will grow from the tiny brown seeds.

Pansies have many bright colors.

Each flower has five petals. And only one flower grows on each stem.

Find a picture of pansies."

The children found this picture of pansies.

What colors are the flowers?

Does each flower have five petals?

Has each stem only one flower?

The children planted the seeds in the little flower pots.

They gave them water every day and kept them in the sunshine.

Soon little plants started to grow from the seeds.

The children took good care of them, and they grew big and strong.

Two days before Mother's Day, Miss Hill said, "Now the plants are ready to be put out in the gardens.

Take them home and give them to your mothers for Mother's Day."

How a Plant Grows

Tom was looking at nasturtiums in the schoolroom window.

"Miss Hill, how can a little seed change into a plant?" he asked.

Miss Hill said, "Every seed has a tiny plant inside it.

In a big seed you can see the plant."

She took some beans from a box.

Each bean had a white coat.

She cut a bean open, and the children saw a tiny white plant inside.

Look at the picture.
Find the white coat.
Where is the plant?

"If a seed is kept warm and wet, the little plant will begin to grow," said Miss Hill.

"The coat of the seed opens, and a root grows down into the earth.

Leaves and a tiny stem grow up into the sunlight."

"I wish we could watch a plant grow from a seed," said Jack.

Miss Hill put some earth in a glass and planted beans in it.

She put the beans against the glass, so that the children could see them.

Look at this glass.

See how the seeds are planted.

When the bean seeds were planted, Miss Hill said, "Now we can watch plants grow from the bean seeds!"

Do you want to watch little plants grow from bean seeds?

Plant some beans in a glass just as Miss Hill did.

Give them a little water and keep them in a warm place.

Look at the glass every day to see when the plants begin to grow.

Watch how each plant grows.

See if the root starts to grow before the stem does.

See if the root always grows down.

Which way does the stem grow?

What Makes Plants Grow?

Plant bean seeds in three pots. Put the pots in a warm, sunny window. Give them a little water every day.

When the plants come up, put one of the pots in a warm place where there is no light.

Water it a little every day.

Keep the other pots in the window.

Give one a little water every day, but do not water the other.

In three weeks see if all the plants are green.

Are they all growing well?

Which one is growing best?

Name two things that make plants grow well.

The Story of a Seed

In Jim's yard a yellow flower grew on a dandelion plant.

Tiny dandelion seeds began to grow inside the flower, and soft white fluff began to grow out from each seed.

Soon the yellow part of the flower fell off. The fluff grew until it made a white ball on the flower stem.

Then the seeds were ready to leave the plant.

One day the wind blew the fluff from the dandelion plant.

Away went the tiny seeds.

The fluff on each seed helped it ride along in the wind.

The little seeds had a long ride, for the wind carried them far away from Jim's yard.

At last the wind stopped blowing, and the seeds came down.

Some of the seeds fell in places where they could not grow.

But one seed fell on soft earth.

After a while a boy came along.

He walked on the little seed and pushed it into the earth.

It stayed there until spring came.

Then the rain and warm sunshine made the little seed grow bigger and bigger.

Its coat came open.

The tiny plant inside the seed was beginning to grow!

A long root grew from the plant and went down into the earth.

A short stem with little leaves grew up into the sunlight.

Then the little seed was a plant!

Little buds grew on the plant, and soon yellow dandelion flowers grew from the buds.

After a while these yellow flowers made seeds.

Each seed had its own white fluff that helped it ride in the wind.

The wind carried the seeds away, and some of them fell on soft earth.

They grew into dandelion plants just as the one little seed had done.

Flowers and Seeds

Picture 1 shows some bean seeds.

Picture 2 shows little bean plants that grew from them.

Flowers grow on bean plants.

New seeds grow from the flowers.

Picture 3 shows some bean flowers.

Picture 4 shows how the seeds grow.

What plants do you know that grow from seeds?

Do flowers grow on these plants?

All plants that grow from seeds have flowers.

The flowers make new seeds.

New seeds grow into new plants.

Look for flowers on plants in the garden.

Look for flowers on plants in fields and along the roads.

Are there plants with flowers in your schoolroom?

Watch the flowers to see if they make seeds.

Plant the seeds in earth and see if new plants grow from them.

The Leaf Book

Sally lived far away. She had come to stay at Jim's home all summer.

Sally liked Jim's home. She liked the green yard and pretty trees.

One day she and Jim were playing under a big tree.

Sally looked up at the tree.

"I like this tree," she said. "It has nice big branches and a big trunk.

It is not like the trees at home."

"This is an oak tree," said Jim.

"How can you tell?" Sally asked.

Jim's mother heard Sally and came out.

She took some leaves from the tree and showed them to Sally.

"You can tell the kinds of trees by their leaves," she said.

"These are oak leaves, and they grow only on oak trees. Other trees have other kinds of leaves."

"Let's look for some other kinds of leaves," said Sally.

"See how many kinds you can find," said Jim's mother. "I will show you how to make a leaf book.

We can use the oak leaves to make the first page of the leaf book."

Jim's mother showed the children how to make a leaf book.

This picture shows the page they made for oak leaves.

Sally and Jim found elm leaves like the leaf in Picture 1.

They found some maple leaves like the leaf in Picture 2.

They found many other kinds, too.

Jim's mother told them the name of each kind, and they made a page for it in the leaf book.

"Now you can tell the names of our trees," she said to Sally.

At last the day came for Sally to go home.

When she was ready to go, Sally looked at the big trees.

"I am afraid I'll forget their names," she said as she got into the car.

"Wait, Sally!" cried Jim.

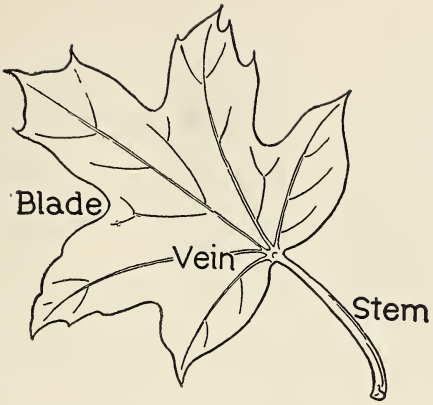
He ran into the house and got the leaf book.

"Here, Sally," he said. "Take this. It will keep you from forgetting the names of our trees."

"Thank you!" said Sally. "I'll make a leaf book for you when I get home. Then you will know what kinds of trees we have where I live."

"I'll like that," said Jim.

"Good-by, Sally, good-by."



Parts of a Leaf

On this page is a picture of a leaf.

The parts of a leaf are the stem, the blade, and the veins.

Do you see the stem?

The blade is the big part of a leaf.

Can you find the blade of this leaf?

In the blade are the veins.

Find a long vein.

Find a short vein.

Three Kinds of Leaves

Picture 1 shows an oak leaf.

Picture 2 shows an elm leaf.

Picture 3 shows a maple leaf.

Is the blade of the oak leaf shaped like the blade of the elm leaf?

Is the blade of the elm leaf shaped like the blade of the maple leaf?

One way to tell one kind of leaf from another kind is by the shape of the blade.

Look at the veins in the maple leaf and find five big veins.

They all begin at the stem.

Look at the veins in the elm leaf.

Find a big vein. Where does it begin?

How many veins begin at the stem in an elm leaf?

Look at the veins in the oak leaf.

How many veins begin at the stem?

Find an oak leaf on page 114 that is shaped a little like a maple leaf.

How many veins begin at the stem?

How can you tell this oak leaf from a maple leaf?

Name two ways to tell one kind of leaf from another kind of leaf.

Things to Find Out

Here are some autumn leaves.

Find the kind of leaf that grows on a maple tree.

Find the kind of leaf that grows on an oak tree.

Find the kind of leaf that grows on an elm tree.

What is one way to tell one kind of tree from another kind of tree?

Find out if a bean plant has leaves like the leaves of a nasturtium plant.

Are the leaves of a dandelion plant shaped like the leaves of a bean plant?

Do the flowers of a nasturtium plant look like sweet pea flowers?

Do they look like pansies?

Do the seeds of a nasturtium plant look like sweet pea seeds?

Do they look like bean seeds?

Do they look like dandelion seeds?

You can tell one kind of plant from another kind by

1. its leaves.
2. its flowers.
3. its seeds.

Plants in Winter

Many plants die when winter comes. But their flowers have made seeds. These seeds grow into new plants in the spring.

There are other plants that do not die in winter. Their stems and leaves die, but the roots stay alive. When spring comes, new stems and leaves grow from the roots.

Trees do not die in winter. The leaves of many trees die. They change color and fall from the trees. But the branches and trunks and roots stay alive all winter. In the spring new leaves grow.

The leaves of some trees do not change color and fall to the ground in autumn.

They stay on the trees all winter and do not die.

These trees are called evergreens because they stay green all the time.

Christmas trees are evergreens!

SUN·MOON·STARS

What the Sun Told

Jim and Father got up very early one morning.

They were going fishing.

Father looked out the window.

"The sun is coming up," he said.

"We must hurry, Jim.

Early in the morning is a good time to fish."

They took a basket of lunch and got into the car.

"Where are we going to fish today?" asked Jim.

"In Blue Lake," said Father.

"Blue Lake is east of here. Do you know which direction is east?"

"Yes," said Jim. "The sun comes up in the east.

It is in the east now.

So if we go toward the sun, we will come to the lake."

"That is right," said Father.

They started toward the sun and kept on going east until they came to the lake.

Then they began to fish.

Jim and Father caught many fish, and while they were fishing, the sun was climbing high overhead.

By and by Father said, "It is time to eat lunch.

It is noon."

"How do you know it is noon?" asked Jim. "I did not see you look at your watch."

"The sun tells me," said Father.

"When the sun is high overhead, it is noon and time to eat lunch."

Jim laughed and said, "I know it is noon because I am hungry."

After lunch they caught more fish.

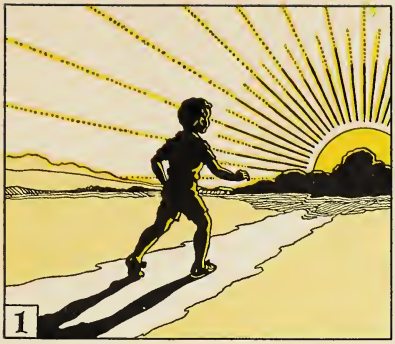
At last Father said, "We must go home. The sun is going down."

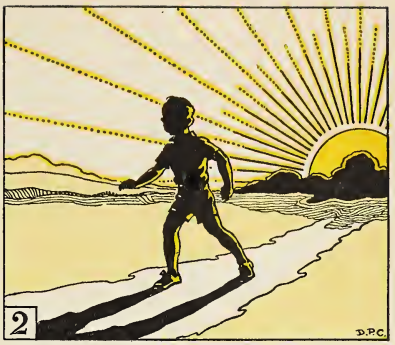
"What direction should we go to get back home?" asked Jim.

"We came east to get to the lake," said Father. "So we should go west to get back home."

"The sun goes down in the west," said Jim. "If we go toward the sun, we will be going toward home.

Let's hurry, or we won't get there in time to eat our fish for supper."





Directions

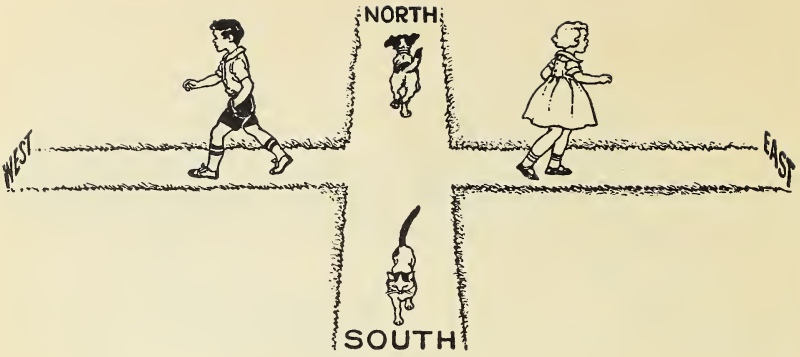
Every morning the sun comes up in the east, and every evening it goes down in the west.

It is early morning in these pictures.

In which direction is the boy going in Picture 1?

How can you tell?

In which direction is the boy going in Picture 2? How can you tell?



East and west are called directions.
North and south are directions, too.
The girl in the picture is walking east.
In which direction is the boy going?
The dog is walking north.
The cat is walking south.

Play you are taking a walk.
Walk toward the north.
Then walk toward the south.
Walk toward the east.
Walk toward the west.

The Sky at Night

It was Jim's bedtime, and Mother went into his room to say good-night.

Jim was looking out the window.

"My! How bright the sky looks!" he said.

"Yes," said his mother. "The sky looks bright tonight because we see so many stars."

"Some nights we can't see any stars," said Jim. "Where do the stars go when we can't see them?"

"The stars don't go anywhere, Jim," said Mother. "They stay right there in the sky all the time.

But on cloudy nights we don't see them because the clouds cover them."

Then Jim asked, "If the stars are always in the sky, why don't we see them in the daytime?"

"In daytime we have sunlight," said Mother.

"Sunlight is so very bright that it keeps us from seeing the stars in the daytime.

But at night it is dark, and we can see the light from the stars."

Then Jim saw the big round moon.

"The moon is coming up in the east tonight," he said. "But sometimes I see it in the west at my bedtime."

"It always comes up in the east," said Mother. "But it does not always come up at the same time.

When you saw the moon in the west, it had come up in the daytime.

You did not see it in the daytime, for the sunlight was so bright that the moon was hard to see.

But in the evening you saw it. It had gone all the way across the sky and was going down in the west."

"So the moon comes up in the east and goes down in the west just as the sun does," said Jim.

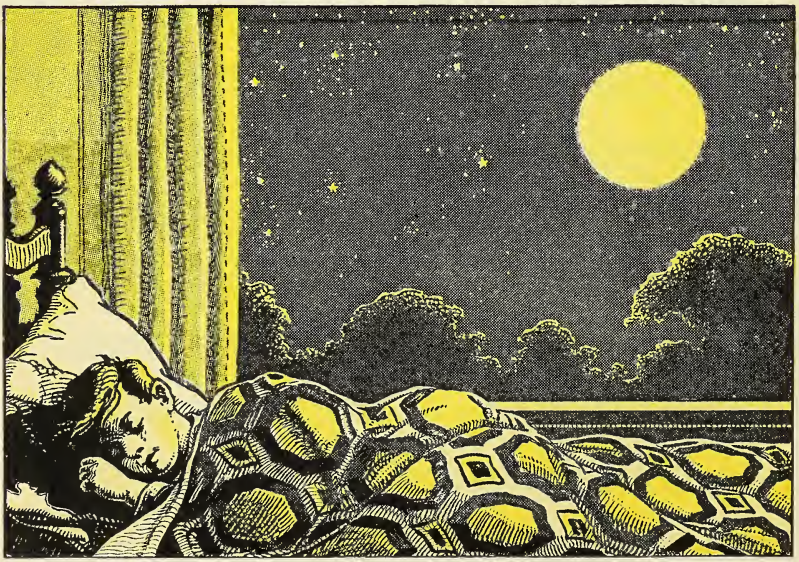
Mother and Jim looked at the moon and stars a little while longer.

Soon Mother saw that Jim's eyes were almost shut.

So she said good-night to him and turned out the light.

But Jim was not in the dark.

The big round moon was shining on his bed.



How the Moon Looks

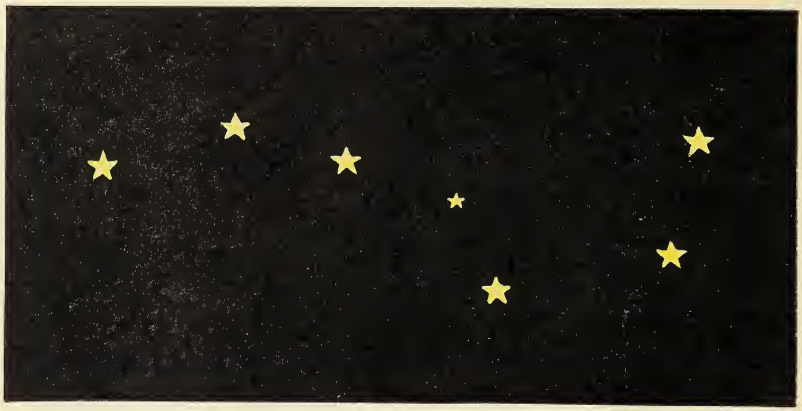
The moon does not always look the same to us.

Sometimes it looks like this.

And sometimes it looks like this.

Sometimes we see a round moon.

And sometimes it looks like this.



The Star Dipper

Some of the stars make pictures in the sky.

Here are some bright stars that make a picture of a dipper.

How many stars are in this dipper?

Did you ever see the Big Dipper in the sky at night?

Look toward the north for it.

See if you can find other star pictures in the sky.

Tell the Answers

1. Name the four seasons.
2. What season is it now?
3. Do you see many animals and plants in this season?
4. Name four kinds of weather.
5. What kind of weather is it today?
6. Name three things that animals have that help them move.
7. How can you tell one kind of bird from another kind?
8. Name three parts of a plant.
9. How can you tell one kind of plant from another kind?
10. In what direction do the sun and moon come up?
11. In what direction do they go down?

TEACHER'S NOTES

The material in this book and its suggested activities may be correlated with the particular course of study in science which the school is following. Before taking up study of the text, the teacher should acquaint herself with the purpose of each of the five parts, and the special suggestions for teaching, as presented in the following pages.

Underlying Purpose of Part I, Pages 6-33: To teach the characteristics of the seasons and present clear-cut contrasts of (1) temperature; (2) length of days; (3) abundance of animal life; (4) abundance of plant life. *Adaptation* of animal and plant life to cold is developed in Parts III and IV; *abundance* of life is the main issue here. Animals and plants can be listed according to whether they are or are not seen in winter in the local environment. A field trip can be made to observe tracks in snow, mud, or sand.

Field trips should be taken during the reading of the unit to observe local seasonal aspects. Children should compare their observations with the seasonal descriptions in the text. In later units, as the seasons actually change, watch for opportunity to review the seasons other than the one in which the unit is read. (See notes for pp. 54, 80, 93, 122.)

Page 13. Make sure children understand that "all living things that are not plants are animals."

Page 27. This picture and exercise should be used to develop an understanding of differences in seasonal aspects between the North and the South.

Pages 31, 32. Be sure that children see the rabbit in the pictures.

Underlying Purpose of Part II, Pages 34-51: (1) To stimulate observation and develop understanding of weather aspects and changes; (2) To introduce experimentation as a method for solving problems.

Page 40: Force of Wind. Pinwheels and wind-driven toys may be constructed to demonstrate that wind has force and direction.

This type of activity should give the child mechanical experience and concepts which will provide a background for the introduction to mechanics in *Science Stories, Book Two.*

Page 42: Experiments. Children should perform the experiments described. Canned heat may be used under teacher's supervision. Varying degrees of rapidity in evaporation will result in the first experiment on p. 44. If conditions are right (plenty of hot sunshine or wind) a little water in the pan will disappear quickly; but it may be necessary to leave the pan in the window more than one day.

Page 47. The answer to the question is "warm, sunny weather."

Underlying Purpose of Part III, Pages 52-87: (1) To promote careful observation of a few common animals; (2) To introduce the idea that classification is accomplished by likenesses (here applied to animals), in (a) habitats, (b) means of locomotion, (c) skin coverings, (d) food requirements, (e) adaptation to cold; (3) To introduce the idea that differences are used as a basis for identification; (4) To introduce the use of diagrams.

Page 53: Local Bird Identification. The same kind of bird is often marked differently in different localities. While observing, call attention to markings that are peculiar to the birds in your locality.

Page 54: Care and Housing of Birds. Stress destruction of insect pests by birds and encourage the children to feed and care for birds. Review the seasonal concepts and observe what birds are winter residents and what ones summer residents.

Page 57: Diagrams. Be sure the child (1) understands the diagram; (2) knows the parts thoroughly before the page is turned.

Page 58. Black and white are considered as colors in identification.

Page 59. The generalization expected is "You can tell one kind of bird from another kind by the color of its parts."

Pages 60-73: Classroom Observation of Young Animals. A hen, a pet bird, a mother rabbit, or cat and young may be brought into the classroom; or if it is desirable to introduce study of the two types of reproduction, bring animals into classroom before young are hatched or born. Children will accept mammal birth as naturally as they do the hatching of young birds and chickens if it is naturally presented. Stress also care and feeding of pets.

Page 74: Aquarium. "Water Animals" can be introduced by observation of an aquarium in the room. Tadpoles in the aquarium are an interesting approach to "A New Animal," p. 75.

Page 79. Animals are classified according to structure and habitat.

Pages 80-85: Adaptation of Animals to Winter. Animals may be listed according to whether they migrate, hibernate, store food, or are seen in winter. Review seasonal aspects of winter.

Page 86: Animal Classification. Classify according to structure, habitat, adaptation to winter, and skin covering. Arrange observation of live animals wherever possible. Authentic pictures should be secured when field trips are not possible.

Page 87. Call attention to the fact that an animal is shown in each small picture. If the child's knowledge is too limited to enable him to answer the questions on this page, provide opportunity for him to gain the needed information.

Underlying Purpose of Part IV, Pages 88-123: (1) To promote careful observation of a few common plants; (2) To classify by likenesses (a) of structure—some plants (pteridophytes and spermatophytes) have roots, stems, and leaves, and some of these (spermatophytes) bear flowers and seeds from which come new plants; and (b) of adaptation to winter; (3) To identify plants through the identification of their leaves, flowers, and seeds; (4) To teach the elements and requirements of plant growth; (5) To continue use of experimentation and diagrams.

Provide opportunity for a school or window garden. Growing plants can furnish material for charts to show classification, identification, and life cycles of plants.

Page 93: Bud Structure. Leaf buds should be dissected for the children. Review spring concepts.

Pages 95-97: Plant Structure. A list should be made of plants common to the locality (include grass, weeds, flowers, vegetables) which have roots, stems, and leaves. Note which of these flower.

Pages 96, 97: Diagrams. See note for page 57. Compare diagrams with living plants.

Page 102: Seed Structure. Seed structure is most easily demonstrated by the use of bean seeds. These should be soaked in water overnight before dissection.

Page 103. Plant beans in different positions, and let the children see that the roots always grow down and the stems up.

Page 105: Experiments. The children should reread this page until they thoroughly understand the requirements for the experiment. The teacher should guide it to the extent of suggesting that several

seeds be planted in each pot, so that they may be sure of securing at least three strong plants in each pot. Possibly more than three pots should be prepared in case some plants die from causes other than being deprived of light and water.

The plants should be well above the ground before the experiment is started. The experiment should also be performed with mature healthy plants other than bean plants.

Page 106. Take into the schoolroom specimens of dandelion flowers, the closed flower in which seed-making is in progress, and the seed-balls, if possible.

Page 114: Mounting Leaves. Before leaves are mounted, they should be thoroughly pressed and dried.

Page 117: Diagrams. See note for page 57.

Pages 118, 119. The generalization to be made is, "You can tell one kind of leaf from another kind (1) by the shape of the blade; and (2) by the veins."

Page 120. The children should identify the leaves in the picture that are common to the locality. They should also secure real leaves from these trees for their leaf books. They should be able to identify at least three trees which grow near the school or home. The generalization to be made here is "one way to tell one kind of tree from another kind is by its leaves."

Page 122: Adaptation to Winter. List local plants according to whether their roots die or live through the winter; list local trees and shrubs as deciduous or evergreen. Review autumn and winter seasonal concepts.

Underlying Purpose of Part V: Pages 124-136: (1) To encourage observation; (2) To introduce sun and moon as guides for direction; (3) To introduce sun as a guide in telling time.

Tell children to watch for moon in daytime and observe varying appearance of the moon. Teacher may be able to demonstrate the relation of the earth, sun, and moon and show why the moon appears to have different shapes.

Page 130: Directions. Directions that the children use in going home and coming to school can be discussed. Children should be able to follow simple directions to a given point, such as "walk north one block, turn east and walk two blocks," etc.

See Note for page 57 regarding diagrams.

VOCABULARY

The total vocabulary of *Science Stories, Book One* consists of 485 different words, which have been carefully selected with regard to general and specific reading needs. Because of the care with which the general vocabulary of *Science Stories* has been chosen, this book may be correlated with any first-grade reader.

The following word list presupposes the reading of the *Basic Primer* and certain units of the *Basic Readers, Book One.* The plan of correlation with *Basic One* is as follows: Part One of *Science Stories* is to be read after the first two units of *Basic One;* Part Two after the third unit; Part Three after the fourth unit; Part Four after the fifth unit; and Part Five after the completion of the basic book. Therefore, words which have been taught in *Basic One* before they appear in corresponding units of *Science Stories* are not listed here.

This list includes 32 words (marked with asterisks) which appear in later units of *Basic One,* after they have been taught in *Science Stories,* and 142 words which do not appear in the *Basic Primer* or *Book One.*

7
spring
frogs

8
*when
mud
*flowers

9
turns
*green
leaves

10
warm
*long
*more
*of

11
*grew
*before
*supper
thick

12
*our
*things
*many

13
animals
butterflies
food

14
autumn
dry
pumpkins
*pies

15
*school
Miss

16
let's
changed
color

17
falling
*other
*table

18
won't
*gone
south
north

19
while

20
ever
kinds

21
*should
picture
does

22
himself
short
*much

23
drink
ice

24
covered
pushed
*around

25
tracks
only

26
*windows
*if

27
*or

28
seasons
which

29
warmer
longer

30
shows
beginning
blossom
35
umbrella
almost
36
clouds
blowing
afraid
keep
37
carried
strong
38
blew
cloudy
*sunlight
39
against
inside
40
air
moving
41
sunny
*sky
42
*fire
*boil
43
weather
44
blackboard
cloth
46
windy
47
book
*room
story
48
hard
50
page
53
Ann
wings
breast
54
bugs
worms
robins
55
tail
throat
56
high
twig
bill
57
parts
number
58
same
59
these
60
used
*bigger
61
screamed
thief
kept
62
Mrs.
laid
*until
soft
63
Mr.
65
weeks
feathers
babies
66
mouth
68
calf
69
hair
71
*eyes
74
fish
swim
*legs
fins
75
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Hopper
78
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tadpoles
80
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82
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83
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84
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89
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90
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92
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93
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94
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95
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100
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102
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106
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